

ANIMAL KEEPERS' FORUM

The Journal of the
American Association of Zoo Keepers, Inc.

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MISSION STATEMENT

(Revised April, 2009)

American Association of Zoo Keepers, Inc.

The American Association of Zoo Keepers, Inc. exists to advance excellence in the animal keeping profession, foster effective communication beneficial to animal care, support deserving conservation projects, and promote the preservation of our natural resources and animal life.

FROM THE EDITOR

This month's cover features a meerkat (*Suricata suricatta*) sitting in an enrichment pumpkin after last year's annual "Boo at the Zoo" event at Cleveland Metroparks Zoo. The photo was taken by Ryan Eedy. Meerkats are small mammals belonging to the mongoose family. They often live in clans of 20 or more individuals and have an average life span of 12-14 years. In this month's issue, you will find the announcement of the 2012 AAZK and AKF Awards. Amongst the *Excellence in Journalism* awards is "Managing Meerkat Reintroductions - Keeping Peace in the House" by Stephen Schulze and Kenton Kerns. That article can be found in the November 2011 issue of the *AKF*. Also in the awards section is the announcement of the newly-created Susan D. Chan Author of the Year Award. This year's recipient is Melba Brown of Smithsonian's National Zoological Park. Congratulations to Melba and to all of the award winners!

If you enjoy this month's cover, be sure to check out the *Enrichment Options* column. The members of the Behavioral Husbandry Committee have assembled for us a highlight on pumpkin enrichment. The pumpkin season is right around the corner and soon there should be a bounty for all of our favorite zoo animals. Need some new ideas? Check it out.

On a final note, it is with great sadness that we say farewell to Andy Henderson, one of AAZK's most respected leaders. One of Andy's long-time friends, Norah Farnham, wrote a beautiful tribute to Andy that will have you laughing out loud and wiping away tears at the same time. Whether you knew Andy well, or never met him, you are bound to learn something new about this very incredible man when you read it. Farewell Andy, I will miss you. - *Shane Good*

Articles sent to *Animal Keepers' Forum* will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for *AKF*. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the Editor. The Editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone, fax or e-mail contributions of late-breaking news or last-minute insertions are accepted as space allows. **Phone (330) 483-1104; FAX (330) 483-1444; e-mail is shane.good@aazk.org.** If you have questions about submission guidelines, please contact the Editor. Submission guidelines are also found at: aazk.org/akf-submission-guidelines/.

Deadline for each regular issue is the 3rd of the preceding month.

Dedicated issues may have separate deadline dates and will be noted by the Editor.

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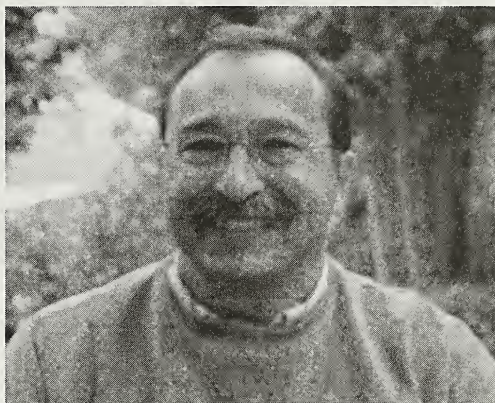
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FROM THE PRESIDENT

The Five Freedoms

Last month, I began my Letter from the President with a prologue. It was my personal statement of purpose as an animal care professional and as a member of AAZK. It was my “why” statement, if you will, on why I do what I do. The last sentence summed it up completely: “We do all this, because we care for animals. Caring for animals does not have the same meaning today as it did 45 years ago. Since the founding of our organization in 1967, our role as animal care providers has evolved, placing a greater emphasis on providing better animal care and connecting people with wildlife.



In recent times, animal welfare has become the hot topic among zoos and animal rights groups, making newspaper headlines and creating public debate. It has sparked a great change in the way some institutions train staff and manage certain species in their collections. In light of all this, concerns for animal welfare has also helped shape the widespread integration of enrichment and behavior training programs in both large and small institutions. Overall, our responses to the challenges of animal welfare yield positive results.

On a very basic level, it is our responsibility as animal care professionals to protect our animals from unnecessary mental or physical suffering. It is also our responsibility to help find solutions to ensure proper animal care. Our expertise in the daily management of the animals we work with qualifies us as problem solvers in this area. Make it a point to think about animal welfare during your daily routines at work by utilizing the following list of the “Five Freedoms.” This list originated from the United Kingdom’s Farm Animal Council in 1979 and is now used widely in animal facilities throughout the United States and European Community.

The Five Freedoms

1. **Freedom from hunger or thirst** by ready access to fresh water and a diet to maintain full health and vigor.
2. **Freedom from discomfort** by providing an appropriate environment including shelter and a comfortable resting area.
3. **Freedom from pain, injury or disease** by prevention or rapid diagnosis and treatment.
4. **Freedom to express normal behavior** by providing sufficient space, proper facilities and company of the animal’s own kind.
5. **Freedom from fear and distress** by ensuring conditions and treatment which avoid mental suffering.

These five freedoms are a good litmus paper test for determining if you are providing enough for the animals you care for. Whether transporting an animal, preparing for extreme seasonal changes, or even introducing with other animals, these five freedoms will help you determine whether you are doing all you can to protect your animals from undue physical or mental stress.

Providing the best care for our animals is a product of the passion that makes our profession so unique. There are many in our field who have dedicated their careers to not only providing quality animal care but also to inspiring and mentoring others to excel as keepers. One such person was Andy Henderson, former AAZK Board of Director (2005-2007). At the end of this issue, you will find a dedication to Andy, who recently lost his battle with cancer.

I first met Andy at Lincoln Park Zoo in 2002 at the Old World Monkey TAG. Our paths crossed many times since that first meeting and each time, Andy made it a point to reconnect with me, discussing everything from guenons to Darwin (Andy, your 1898 Second Edition of Darwin's *The Descent of Man* is still displayed proudly on my bookshelf). In 2005, I ran into Andy at the conference hotel in New Orleans. Andy was stepping into the elevator as I was getting out. I was fleeing the city just before the arrival of Hurricane Katrina and Andy was just starting his adventure, choosing to stay in the city. Andy marched to the beat of a different drummer, always choosing to live his life with Thoreauvian gusto. To me, Andy was the personification of Robert Frost's poem *The Road Not Taken* from which the last stanza reads:

*I shall be telling this with a sigh
Somewhere ages and ages hence:
Two roads diverged in a wood, and I—
I took the one less traveled by,
And that has made all the difference*

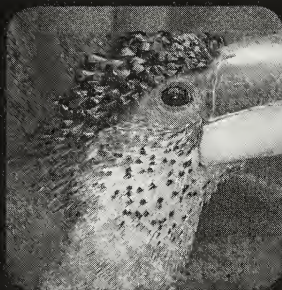
Farewell, Andy, happy travels, and rest in peace.

Bob Cisneros

References

Animal Welfare Education: Five freedoms. animalwelfare-education.eu/information/five-freedoms.html

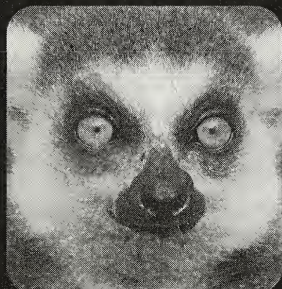
Frost, Robert. 1920. *The Road Not Taken*. Mountain Interval.



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COMING EVENTS

Post Your Upcoming Events here — e-mail shane.good@azk.org

November 2-4, 2012

New World Primate Husbandry Workshop

For more information including registration forms, please contact Dr. Stephanie Allard at sdampier@palmbeachzoo.org or Michelle Farmerie at mrfarmerie@aol.com.

November 5-8: The 2012

Elephant Managers Association Conference

"Trunks and Palms" will be hosted by the Santa Barbara Zoological Gardens in Santa Barbara, CA. The Pre-conference trip will be hosted by the Los Angeles Zoo in Los Angeles, CA on Monday, November 5th followed by a cocktail party at the contemporary waterfront Cabrillo Art Center that evening. The conference will include two and half days of presentations followed by a Zoo Day at the Santa Barbara Zoo. The conference will conclude with a California cuisine banquet and auction. Beachfront accommodations and presentations will be held at the Hyatt of Santa Barbara: santabarbara.hyatt.com. To register or submit abstracts please visit: sbzoo.org under events-EMA. For additional information please e-mail lwilson@sbzoo.org.

December 3-7, 2012

Training and Enrichment Workshop for Zoo and Aquarium Animals

Hosted by Moody Gardens in Galveston, TX, Active Environments and Shape of Enrichment are proud to present the Sixth Training and Enrichment Workshop for Zoo and Aquarium Animals. The workshop will present an array of topics relating to the behavioral management approach to caring for captive animals, with a focus on environmental enrichment, positive reinforcement training techniques, and the problem-solving process. For more information e-mail dolsen@moodygardens.com or go to enrichment.org.

February 27 - March 2, 2013

21st Annual Conference of the International Association of Avian Trainers and Educators

Hosted by Tampa's Lowry Park Zoo, Tampa, FL. For more information go to: iaate.org/iaate-annual-conference/2013-conference

April/May 2013

Chimpanzee Meeting and Husbandry Workshop

Please Save the Date: The Chimpanzee SSP and the Houston Zoo are hosting the next Chimpanzee Husbandry Workshop to take place April 30 – May 2, 2013. The Chimpanzee SSP meeting will precede the workshop on April 29, 2013. Stay tuned for more information.

July 8-12, 2013

Zoos and Aquariums Committing to Conservation (ZACC)

Hosted by Blank Park Zoo, Des Moines, Iowa. The conference will bring together colleagues from the field and zoos in an informal setting to network, share ideas and support one another in our shared commitment to conservation. Registration is available at blankparkzoo.com/index.cfm?nodeID=48429&audienceID=1. Contact Jessie Lowry with questions at jrlowry@blankparkzoo.org.

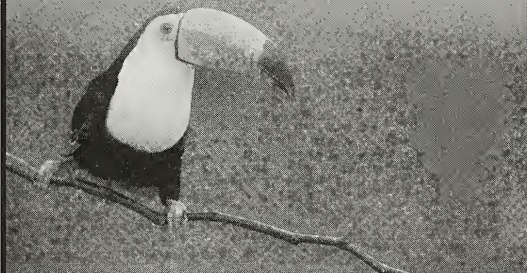
September 22-26, 2013

AAZK NATIONAL CONFERENCE

Hosted by North Carolina Zoo and North Carolina AAZK Chapter, Asheboro, NC.

For more information go to: ncaazk.com/2013nationalconference.htm

National Conferences



AZA

2013 - Kansas City, MO - September 7-12
2014 - Orlando, FL - September 12-17
2015 - Salt Lake City, UT - September 17-21

aza.org

AAZK

2013 - Asheville, NC - September 22-26
2014 - Orlando, FL - September 8-12
2015 - St. Louis, MO - Dates TBD

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— AAZK ANNOUNCES NEW MEMBERS —

NEW PROFESSIONAL MEMBERS

Karren Vacco, Pittsburgh Zoo, Pittsburgh (PA)

Ashley Hale, Mill Mountain Zoo (VA)

Jeffrey Souther, Riverbanks Zoo and Garden, Columbia (SC)

Samantha Staunch, Tampa's Lowry Park Zoo, Tampa (FL)

Julia Krajci, Brookfield Zoo, Brookfield (IL)

Kelly Cowley, Potter Park Zoo, Lansing (MI)

Mallory Carmean, St. Louis Zoo, St. Louis (MO)

Amy Sarno, Denver Downtown Aquarium, Denver (CO)

Reid Sneddon, SoCal Reptiles, (CA)

Adam Zubby, Oakland Zoo, Oakland (CA)

Teresa Lopes, Micke Grove Zoo, Lodi (CA)

RENEWING CONTRIBUTING MEMBERS

Gloria K. Kahn, Los Angeles Zoo, Los Angeles (CA)

RENEWING INSTITUTIONS

Prospect Park Wildlife Center, Brooklyn (NY)

Cosley Zoo, Wheaton (IL)

Happy Hollow Zoo, San Jose (CA)

RENEWING COMMERCIAL MEMBERS

Reliable Protein Products, Phoenix (AZ)

Heather Strawn Wins BFR's 2012 Honorary Trip to Lewa

Bowling for Rhinos is AAZK's biggest conservation effort. There are a number of people that are the true heroes in making AAZK's "Bowling for Rhinos" successful. Year after year, they tirelessly organize their event with little recognition. Their reward is in knowing that they are helping to conserve wildlife worldwide.

In 2007, AAZK, Lewa and Anna Merz began recognizing these dedicated members by rewarding them with a chance to see firsthand the results of their dedication. Lewa will host an individual and a companion for one week at Lewa Wildlife Conservancy in Kenya.

Heather Strawn of the Cleveland Metroparks Zoo is the 2012 recipient of this trip. Heather has been one of the top ten money raisers in the country a number of years. She has been the Cleveland BFR Coordinator for nearly ten

years now, raising over \$106,000 and making Cleveland one of the more successful events. She has consistently raised the most money in her Chapter while she continues to organize the event. Heather's tireless efforts have not gone unnoticed in the conservation field so it is with great pride that I announce she be awarded with a free trip to visit Lewa Wildlife Conservancy in Kenya in October, 2013. She and a companion will be hosted by Lewa on their adventure to be firsthand observers of the wildlife that benefits from Heather's hard work and dedication. Congratulations Heather for a job well done! – *Patty Pearthree*



THANK YOU!



The Galveston Chapter of AAZK is getting ready for our very involved, winter-long fundraiser. We team up with the Festival of Lights at Moody Gardens and sell s'mores at the firepit. It is a big hit for a lot of families and our profit is growing exponentially. Last year we funded two tree conservation programs, one of which is funding the tree planting for an entire park here in Galveston! Our spring fundraiser, "Wild About Wine" was our most profitable yet and we

were able to donate almost \$3000 to Bat Conservation International and Lubeck Conservancy. We look forward to hosting Gary Priest from the San Diego Zoo in October for our annual "Evening of Training Talk" in which we invite everyone in the area to attend and have a night dedicated just to topics of training.

The AAZK Board of Directors sends their sincere appreciation to the Galveston Chapter for sponsoring this month's AKF.



CALL FOR PAPERS

For Dedicated Issue of *Animal Keepers' Forum* – Multi-species Bird/Ungulate Habitats

The challenges we face in building sustainable zoo populations while creating dynamic habitats require innovative solutions. Ungulate and bird curators, managers and keepers have much to gain by collaborating together to explore ways to maximize our limited exhibit space. Increased space for our program species, more dynamic and more naturalistic exhibits to benefit our animals and our visitors, and diversification of keeper skills are just some of the benefits of multi-species bird/ungulate habitats.

We encourage those interested to submit manuscripts for consideration to be included in this dedicated issue. Possible topics could include, but are not limited to:

Reproduction/neonatal care

Feeding/nutrition

Veterinary care

Exhibit design

Pest control

Introductions of new animals

Staff communication

Benefits of Hoofstock/Bird multi-taxa habitats

Birds 101 for Hoofstock Keepers/Managers

Hoofstock 101 for Bird Keepers/Managers

Training/enrichment

Species selection

Papers should be submitted electronically, in MS Word only, to shane.good@aazk.org. Please use Times New Roman font (10 pt. text body). Please put "Bird Ungulate Issue" in the subject line of your e-mail. Papers should be no more than 10 pages in length. Any charts and/or graphs should be submitted in their native program (i.e. Microsoft Excel, Word, etc.). Photos submitted electronically should be high-resolution (minimum 300 dpi, 1 MB, 900 x 600 pixels) jpg or tiff files. Photos, charts, and graphs should be submitted as separate files and not be embedded in the manuscript. Be sure to include proper photo credit and a suggested caption for each photo. Please reference the complete set of AKF submission guidelines at aazk.org/akf-submission-guidelines/.

Be sure to also include your complete contact information including name, address, e-mail and a daytime phone where you may be reached if we have questions concerning your submission. Also be sure to include your facility and your job title at that facility.

Deadline for submission of articles for this special issue is **February 1, 2013.**




Special Call for Papers: Dedicated Issue on Gorillas

All papers on gorilla husbandry and conservation welcome.

Deadline for submissions is February 1, 2013.

See above for submission guidelines.



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2012 AAZK Award Recipients

Lifetime Achievement Award

OLIVER CLAFFEY

Toronto Zoo.

This award is in recognition of his outstanding commitment to professionalism in his distinguished career as a zoo keeper. Specifically noted is his high level of mentoring for anyone entering the zoo profession, and his animal management and husbandry techniques have impacted many of the zoogeographic areas of the Toronto Zoo. He has submitted articles for *AKF* and helped develop the Bactrian Camel Training Program. Also noted is his service to AAZK on a Chapter and National level, the Chapter's driving



force to host two National Conferences and the song "Zoo Keeper Blues". His career was an amazing journey of passion, commitment and conservation initiatives. Such action earns the praise and respect of all members of the zoological profession.

Oliver began his zoo career as an Animal Care Keeper in 1974 when the Toronto Zoo first opened its doors to the world. He has seen many changes in the zoo industry but one thing has and will always remain the same: "Keepers Care". His high level of mentoring for anyone entering or in the zoo profession is hard to match. He has maintained a large network of professional zoo contacts which helped him remain current in animal management and husbandry techniques. Zoogeographic areas at the Toronto Zoo that have been affected by his influence include the Canadian Domain, IndoMalaya Pavilion, Americas Pavilion, Australasia Pavilion, Africa Paddocks, Eurasia Paddocks and the Children's Outreach & Discovery Section.

Ollie has served on both the National AAZK's Board of Directors as both Vice President and President and on the Toronto Zoo Chapter's Board of Directors. As National President, he was the first non-American to hold this position. He has attended upwards of thirty AAZK National Conferences and was one of the driving forces to host two National Conferences in 1981 and 2001.

Ollie was the recipient of the AAZK Certificate of Excellence in 1985. He co-authored publications in the *Animal Keepers Forum*; "Captive Reproduction of the Sheltopusik (*Ophisarus apodus*)" in 1982 and "Breeding the Tawny Frogmouth at the Metro Toronto Zoo" in 1985. He also helped develop the Bactrian Camel Training Program.

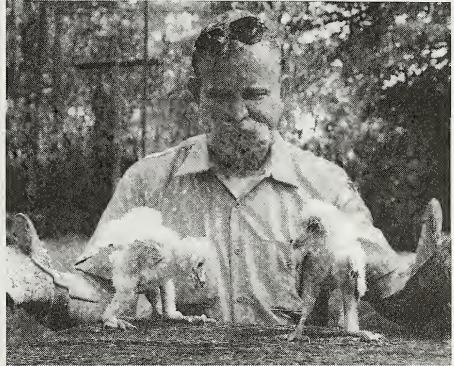
His passion for zoo keeping has spilled over into his love of music when he penned the song "Zoo Keeper Blues" which is still requested at zoo events. He retired this year as an Animal Care Supervisor. Ollie's thirty-eight year career was an amazing journey of passion, commitment and conservation initiatives.

Lifetime Achievement Award

KNOX MARTIN

Memphis Zoo

This award is in recognition of his outstanding commitment to professionalism in his distinguished career as a zoo keeper. Specifically noted has been his work as coordinator of the Raptor Rehab program, educational outreach in the Tri-State area, conservation and the development of the off-site Mid-South Raptor Center. Also noted is his service as Chapter treasurer, working countless events throughout the years and as a member of national and international conservation and rehabilitation groups. Such action earns the praise and respect of all members of the zoological profession.



Knox started at the Memphis Zoo as a volunteer caring for injured or orphaned birds. For fifteen years he worked as a dependable and dedicated swing keeper in all the mammal areas at the zoo. He became the coordinator of the Raptor Rehab program at the Memphis Zoo, which became one of the largest rehabilitation programs in the Mid-South, rehabbing over 200 birds each year.

Through this program he served as an ambassador for the Memphis Zoo, sharing his passion about raptors through educational programs both on site and in the Tri-State area.

He continued to work in the Bird Department after the Raptor Rehabilitation program was cut from the Memphis Zoo and found the means to begin an off-site raptor rehabilitation program, the Mid-south Raptor Center. Many of these birds can be released back into the wild, but for those that can't, Knox is able to give them a home at the Center, or in facilities around the country. The Mid-South Raptor Center not only provides rehabilitation services for the birds in the Tri-State area, but parts of Alabama and Kentucky as well. Through it's educational programs, annually over 10,000 people have the opportunity to not only see live hawks, eagles and owls at close range, but also learn about raptors and their function in the ecosystem.

Knox served over ten years as the Memphis AAZK Chapter treasurer and volunteered for countless events throughout the year. Even though he retired in January, he is still a welcome sight at monthly meetings. He is also a member of several national and international conservation and rehabilitation groups including: National Wildlife Rehabilitators Association (past member of the Board of Directors), International Wildlife Rehabilitation Council, Tennessee Wildlife Educators & Rehabilitators Association, Tennessee Ornithological Society (past state officer), National Audubon Society, Sierra Club, and the American Birding Association.

After twenty-five years as a zoo keeper, Knox's service to the community continues at the raptor center by amazing, delighting and educating Mid-Southerners about these incredible creatures.



AMANDA ISTA
Milwaukee County Zoo

This award is in recognition of her outstanding commitment to professionalism during her distinguished career as a zoo keeper. Specially noted are the multiple husbandry programs she initiated in Big Cat Country, wolverine reproductive research, service on the Green Team and Enrichment Committees, and Polar Bears International/AAZK Arctic Ambassador program. She also is the AZA Short-crested Rockhopper Penguin Studbook Keeper/Green SSP Coordinator, the Long-crested Rockhopper Penguin Red Studbook Keeper, and the Small Carnivore TAG Striped Skunk Point Person. Also noted is her service to AAZK on a Chapter and National level and *AKF* articles.

Jean M. Hromadka Excellence in Animal Care Award

HARRY HOF AUER
Toronto Zoo

This award is in recognition of his outstanding commitment to professionalism during his distinguished career as a zoo keeper. Specially noted is his outstanding animal husbandry, initiative, exhibitry, new keeper training, working with the High School Co-op Program, conservation, and exemplary performance in the line of his duties. Also noted is his help in developing the Bactrian Camel Training Program.



Lee Houts Excellence in Enrichment Award



JENNIE ZEIGELMEYER ARCHIBEQUE
and
HOLLIS FERGUSON
Happy Hollow Park & Zoo

For developing and implementing a daily calendar system for enrichment, with the goal of increasing the variety and frequency of enrichment to as many species as possible in the zoo. Each routine has a whiteboard calendar listing which of the twelve categories the keeper should choose enrichment from, for each exhibit, and has a high rate of participation among both the full-time and part-time Zoo Keepers.

Certificate of Recognition

TAMMY ROOT

Indianapolis Zoo, for serving on the AAZK Board of Directors

SHANE GOOD

Cleveland Metroparks Zoo, for serving as Co-Chair of the International Congress of Zoo Keepers

ANGELA BINNEY

Disney's Animal Kingdom, for serving on the Behavioral Husbandry Committee

DAWN NEPTUNE

Utah's Hogle Zoo, for serving as the Animal Welfare Committee Liaison

JENNIFER MACNAUGHTON

Busch Gardens, for creation of the Bowling For Rhinos video.

MARK DE DENUS

For serving as the AAZK *Insight* Editor

SETH GROESBECK

Rosamond Gifford Zoo, 2012 National AAZK Conference Chair

Certificate of Appreciation

ROSAMOND GIFFORD ZOO

2012 AAZK National Conference Host Institution

ROBIN SHEWOKIS

The Leather Elves, for serving as Advisor to the Behavioral Husbandry Committee

Distinguished Service Award

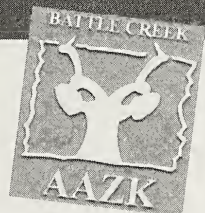


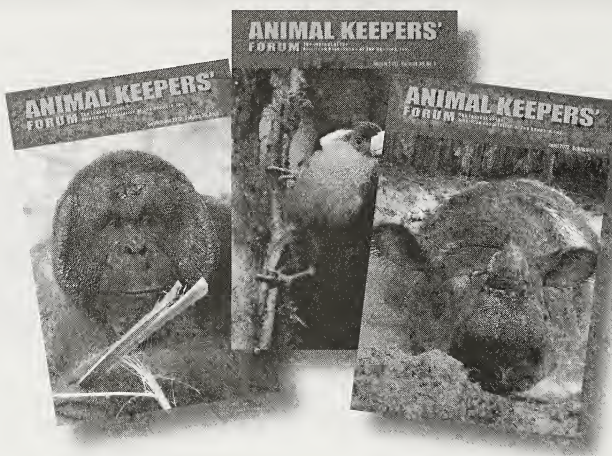
ROSAMOND GIFFORD ZOO CHAPTER OF AAZK

2012 AAZK National Conference Host Chapter

Chapter of the Year

BATTLE CREEK CHAPTER OF AAZK





2012 *AKF* Awards

Susan D. Chan Author of the Year

Melba Brown, Smithsonian's National Zoo



**PART I – A SPECIAL PARTNERSHIP
PART II – LEMUR ISLAND ENRICHMENT**

**ENRICHMENT EFFECTS ON LEMUR BEHAVIOR AND
EXHIBIT VISIBILITY (*Lemur catta*) AND (*Eulemur fulvus rufus*)**

February 2012

Melba Brown, Thomas Moore, Lawrence Anderson, and Jane Steil
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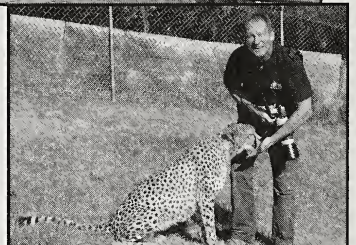
Tim Stahl (pictured bottom right)
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July/August 2011

Lindsey D. Kirkman
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**Necessity is the Mother of Invention:
Introducing a Channel Island Fox
(*Urocyon littoralis clementae*)
and a North American Porcupine
(*Erithizon dorsatum*)
for a Mixed-Species Exhibit**

*By Nikii Finch-Morales, Director of Wildlife
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NikiiFM@CuriOdyssey.org*

Abstract

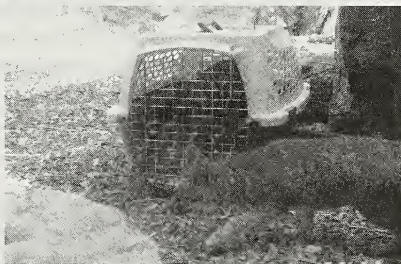
In 2008, the Association of Zoos and Aquariums (AZA) Rodent, Insectivore and Lagomorph Taxon Advisory Group (TAG), in association with the AZA Animal Welfare Committee, created the Porcupine Animal Care Manual. After reviewing the manual and our own porcupine exhibit, we found that the difference in the exhibit we currently had and what was recommended was significant. The lack of physical space made it difficult to meet the welfare needs of our porcupine: room for adequate movement/exercise, opportunity to browse in multiple locations and access to an outside area with a natural substrate flooring. Although we are beginning our Master Plan soon, we currently did not have the space for expansion of our porcupine exhibit. Initially we decided to phase out the North American porcupine from our Institutional Collection Plan, but later decided that placing her in a mixed-species exhibit would allow us to keep the species and create a new exciting exhibit at the same time.

Introduction

Most of the animal exhibits at CuriOdyssey were built in 1990. At the time we were not accredited by AZA so the animal exhibits were built to meet the animal housing standards for the California Department of Fish and Game. Over the years, captive animal observations and field research by animal professionals have further defined the housing and individual needs of specific species.

The recommended enclosure size for a single North American porcupine is at least 1.52m x 1.52m x 2.43m high (5ft. x 5ft. x 8ft.), or 90.61 cubic meters (200 cubic feet). Our porcupine exhibit was 80.64 cubic meters (178 cubic feet). Given this fact, we decided to either phase the species out of our collection or build a larger exhibit. We preferred the second option but due to funding and available space, this would not be possible for a number of years. So we started to evaluate our other exhibit spaces, holdings, and grounds for an appropriate place to put her. There were no suitable vacant exhibits so we turned to our occupied exhibit spaces to see if there was an exhibit that would be large enough to house the porcupine with one of our other species. Our Channel Island fox presented as an ideal candidate for pairing.

The Channel Island fox is one of the smaller species of fox. It is considered to be docile, curious by nature, and to have a general lack of fear of humans (Baird, 1974, Moor & Collins, 1995). This is



The three photos above show the process of scent exchange and visual introduction between Diego and Peanut. *Photos by Author*

most likely because they come from an environment that was historically free from large predators and humans (National Park Service, 1999). Although they are predators, their native prey is small so they are not inclined to prey on animals that are larger than they are. Due to the fact that North American porcupines are non-confrontational herbivores, they are good candidates to place with other species.

The two species seemed to be a good match, but the key factor was the individual personalities of our two particular animals. “Diego” was a captive-born fox. He is timid when approached, but will not retreat if food is offered. When a keeper enters the exhibit, most of the time he does not get up at all. “Peanut” was a captive-born porcupine. She is curious and will venture out to any place that has food. She only thrashes her tail if it is directly touched, and she rarely raises her quills unless she feels a threat is near. Even then, it is a slow and mild attempt.

Method

Pairing the porcupine and fox presented the best and most immediate solution to our exhibit problem. With that decision, we developed a plan that would ease Diego and Peanut into their new living arrangement. There was a potential danger to Diego that he could be quilled so the introduction process needed to be gradual in order to give them the time they needed to acclimate to each other. It was also important to incorporate multiple visits within each critical introduction stage, starting from brief meetings to substantially longer encounters. With approval from CuriOdyssey’s Executive Director, the Institutional Animal Care and Use Committee, the Channel Island Fox Population Plan Manager, and the loaning institution we were ready to embark on the introduction process.

The introduction plan included the following critical stages:

- Healthy animal exams
- Scent exchange
- Visual introductions
- Physical introductions

Both animals received a clean bill of health from our veterinarian so we were able to start the process of scent exchange. The scent exchange varied from urine marked bedding to feces and fur. Although many of the initial visits were conducted before open hours, later visits were incorporated into our scheduled Keeper Talks and Enrichment sessions. Visitors were fascinated and excited to have the opportunity to see these new interactions. It also gave the fox and porcupine the opportunity to experience the noise and commotion of daily visitors while being rewarded for positive behaviors towards each other.

Sessions and Observations

The entire introduction process took four months, which was longer than we had planned. But keeper time was limited due to the Keepers' other animal care and enrichment responsibilities. The introduction plan also depended on our veterinarian's availability in case an incident occurred. Wet winter weather was another unanticipated factor that extended the introduction process. Given these constraints, we could not proceed with the introduction on a daily basis and instead had to wait for those days when there was available time, appropriate staff and reasonably good weather.

Introduction Log

8/25/2010: Scent introductions begin. It appeared that neither the fox nor the porcupine was interested in the other's scent.

8/31/2010: Visual introductions (VI) begin. The porcupine was brought into the fox enclosure in a secure crate. Initially, the fox was uninterested in the crate or the porcupine inside. He would only come down from his exhibit rock outcrop when food was presented. When he finished eating he would promptly go back to his ledge or into his den to sleep. Similarly, the porcupine was only interested in eating the food that was offered and would go back to sleep when she was done. After a few sessions, we noticed that the fox would look into the crate whenever he heard the porcupine crunching on her food.

9/13/2010: During the fourth VI session, they moved about 15.24 centimeters (six inches) from each other through the back windows of the porcupine's crate. The fox then moved around to the door of the crate. As the fox approached, the porcupine quickly raised the quills on her back and then relaxed her quills a few seconds later. Once the porcupine relaxed she had much more interest in the fox. She started sniffing the air and then turned around in the crate to face him through the door.

10/10/2010: The fox came down from one of his ledges and marked (urinated) near the front of the crate. The marking was the only territorial display we saw from the fox during any of the sessions. For most of the VI sessions he just watched the process from his upper den.

10/20/2010: Eleven sessions after the first scents were exchanged, they were ready for their first physical introduction (PI). As soon as the crate door opened the porcupine ventured out. She sniffed everything and went into the lower of the exhibit's two dens. She also walked up to one of the large visitor viewing windows. The keeper in the exhibit was there to reward her for her calm behavior during her exploration of the exhibit. When the fox noticed that she was out of the crate, he immediately got up and stood at the entrance of the higher den. Although he was on guard, he remained calm and was rewarded for his behavior. As a result of the positive reinforcement, the porcupine learned that the sessions in the fox exhibit were positive food opportunities. During one PI session, the porcupine even solicited keepers to engage in training sessions.

12/22/2010: The PI sessions began as 30-minute intervals with a keeper present in the exhibit. Eventually the PI sessions were extended to four-hour sessions with a keeper or volunteer observing and recording behaviors from outside of the exhibit. During these sessions, the guillotine door to the

indoor holding area was left open so that the porcupine could explore that area as well. She had little interest in the holding at first, but she eventually explored it.

Mid-December: As the weather became cold and rainy, the porcupine explored less and spent more of her time in her crate or in the lower den. Even as we moved to full-day sessions, they both stayed away from each other. The porcupine seemed to have lost all interest in the fox. The fox was still interested in the porcupine, but only if she was exploring an area near him. Although the porcupine was not as active as she had first been, she still crated to end the P.I. session every time she was presented with the opportunity. This was the case at the end of all sessions, with the exception of one day in late December when she refused to leave the exhibit.

12/28/2010: After four full-day PI sessions, the porcupine decided to speed up the process by initiating her first overnight visit with the fox. This was three days ahead of the written plan, but we felt that, given their progress thus far, we did not want to create a negative association with the sessions by herding or netting one of them to separate them for the night. As a precaution we barricaded the lower den that the porcupine was in to ensure that no night aggressions would take place.

12/29/2010: The barrier was removed and the porcupine was given access to the entire exhibit and holding once more. Once she left the den, the keepers blocked it off to encourage her to go into the holding. After approximately 20 minutes exploring the exhibit and eating her A.M. diet, she went to the barrier, pulled it down, and went back inside the lower den. Later that morning, she left the lower den to go into her crate. At that time we moved the crate closer to the holding area and wedged it in place, in order to show the porcupine where she could find her evening meal and a warmer place to go at night than the lower den in the exhibit.

12/30/2010: It appeared that she ate very little of her P.M. diet and did not explore the holding, so we kept her locked in the holding with her crate for the rest of the day and night.

12/31/2010: The keepers observed that she had explored the entire holding and had found and eaten all of her diet. The crate was moved and she was allowed access to both the exhibit and holding.

1/1/2011 -1/8/2011: New logs and branches were added to encourage the porcupine to climb up to the ledges rather than only sleeping in the lower den. With a little help and a few rewards from the keepers, the porcupine was encouraged to climb on the new logs and find the higher ledges and crate to rest in. Although it appears that the porcupine still prefers the lower den, she is accessing all the areas of the exhibit that are physically accessible to her.

The Final Result

With the success of the physical introduction sessions and overnights, and the evidence that the porcupine was aware of where her A.M. and P.M. diets were placed, we decided to leave the porcupine permanently in the exhibit with full access to the exhibit, holding, and her new exhibit companion. Our Channel Island Fox and North American Porcupine were officially part of a new mixed-species exhibit.

Over the past six months we have seen a dramatic shift in the porcupine's behavior. As the weather warmed, her activity level has been the highest it has been in the last ten years. She has explored every inch of her exhibit and now interacts with the keepers every time they enter it. She seems to have become increasingly interested in the fox, as well. In July, we witnessed one of the most surprising behaviors we had seen from either the fox or the porcupine. The fox was lying down on the exhibit floor sunning himself, when the porcupine came over to investigate. After briefly smelling the fox, she proceeded to lie down on top of him. The fox seemed completely unbothered by the incident and remained where he was.

Though the idea of placing our Channel Island fox and North American porcupine together came more from necessity than a desire to try a new mixed-species exhibit, the results have been overwhelmingly positive. Placing the fox and porcupine together has provided a number of benefits both for the animals, keepers, and visitors, including:

- A new, interesting exhibit experience for our visitors
- An opportunity for the keepers and volunteers to document new animal behaviors seasonally
- An opportunity for two previously solitary individual animals to experience additional social enrichment
- Provided for the welfare needs of two of our animals
- Additional space for the porcupine to exhibit more natural behaviors like climbing higher branches and foraging for browse
- Provide other animal facilities with a model and method for introducing similar species

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The final result: Diego and Peanut Cuddling. *Photo by Author.*

The Turtles of the Education Program: Strong Ambassadors for the Ecomuseum Zoo.

Julie Tougas¹ and Helene Caron²

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The Ecomuseum zoo is a small, CAZA-accredited institution located in Québec, Canada. The zoo is managed by the Saint-Lawrence Valley Natural History Society whose mission focuses on education, research and conservation. Through this three-pronged approach, the Society fosters an appreciation and understanding of the physical and biological characters of the regional flora and fauna. Over the years, the Ecomuseum zoo has developed an extensive onsite and offsite educational program. The zoo's onsite activities will expose over 20,000 children to the wonderful world of animals. Moreover, the zoo's zoologist-educators will have the opportunity to influence the lives of over 6,500 children during the 280 offsite presentations scheduled every year. The zoo offers several different offsite presentations, covering general topics such as biodiversity, to more specific topics such as birds of prey or amphibians.

With its living collection of wildlife species serving a dual role as both ambassador and catalyst, the Ecomuseum offers unmatched learning experiences for both children and adults. At the zoo, we have a special appreciation for turtles. Live education turtles have become stellar ambassadors, travelling daily with our educators to offsite events and playing key roles for visitors during our onsite guided tours. Over the course of a one-year period, a turtle is presented during each of our over 900 scheduled onsite guided tours providing visitors with the opportunity to touch a live turtle's carapace. Our educators will also present live turtles in approximately 60% of offsite presentations.

Several factors combine to make turtles a beneficial addition to any presentation; namely their charismatic appeal, their gentle behaviour and the ease of transport. It should be noted however that the use of live turtles also presents several challenges such as: the public's awareness that turtles can carry *Salmonella sp.*, housing requirements and animal acquisition. In this paper, we explore and review the advantages and challenges that we have associated with the use of live turtles within our educational program. We will also describe the special care and considerations needed for the care of our education turtles. This article will not be discussing, nor debating, the advantages of live animals within any educational program.



Educator presenting *N. map* turtle.

Photo by Claude Lafond



Educator with *N.A. wood* turtle.

Photo by Victoria de Martigny



Educator with common snapping turtle.

Photo by Victoria de Martigny



Educator with N.A. wood turtle.

Photo by Claude Lafond

Why turtles?

Unlike snakes which carry very negative appeal (Mullin and Seigel, 2009), we believe that turtles benefit from a social charismatic appeal within the general public. Our onsite presentations have supported this hypothesis as these events include interactions with both a snake and a turtle. Numerous occasions of negative responses have been observed in the presence of the snake. This fear is unfortunately reflected by the accompanying children. The presence of the turtle however created both excitement and curiosity in both adults and children. Without fear, curiosity permits participants to remain receptive to learning about the biology and conservation of turtles and of reptiles in general. As a result of the public's openness to learn, turtles become an ideal taxon to use when educating about biodiversity, evolution and the food chain.

An education turtle, when properly acclimated to its routine, can remain calm when surrounded by a large group of people. This calmness can be interpreted in an anthropomorphic and positive manner by the public; they feel as if the turtle is happy to be held and touched. This interpretation contradicts the common misconception that zoos and aquariums are exploiters of animals (Hutchins *et al.*, 2003). In addition, turtles remain an excellent choice when there is desire to offer the public the chance to touch a live animal. A turtle's solid carapace and scale-covered limbs (although the head, tail and limbs are not regularly touched) offer excellent protection. The risk of physical trauma related to touching remains therefore low. Furthermore, the turtle's ability to enter its carapace, as a form of refuge, offers the handler insight related to the turtle's stress level and he/she can react appropriately by concluding that part of the presentation. Such protective behaviour, if displayed, can also be indicative of post-presentation physical discomfort which may or may not be combined with anorexia (unstressed turtles are always hungry!).

The turtle's morphology facilitates its transport; its shell and scaled limbs offer a high level of protection from abrasions. Finally, the use of live turtles during presentations can help dispel four widely held misconceptions, namely: that all turtles can hide in their shell, that they can crawl out of their shell (this point can be further explained by the use of a naturalised carapace), that the carapace is indestructible and that turtles are slow!

A special note in regards to the use of indigenous species: The Saint-Lawrence Valley area includes the natural distribution range of eight species of freshwater turtles. Our experiences show that much of the local population is unaware that turtles exist in the area (especially those living in urban centers). The use of indigenous species will therefore promote awareness of our local biodiversity, while also creating an emotional connection when discussing conservation issues. This association and sensitivity is compounded if participants with heightened awareness were to observe a turtle in a wild, yet local, setting.

Challenges

The use of live turtles can also present several challenges. One of the biggest and most notable issues relates to the transmission of *Salmonella sp.* It has been found that turtles may be infected at a rate between 12.1% and 85% (Mader, 2006). It has been shown however that a healthy, un-stressed animal is less likely to shed the bacteria (Gray, 2011). It is recommended that a simple hand sanitization after touching a turtle can prevent infection (Gray, 2011). In consideration of these facts, our turtle interaction sessions are always followed by hand washing or hand sanitization. The participants are informed of the reason behind these practices. The chances of contamination are further reduced by ensuring cleanliness in both the turtle's temporary and permanent enclosures.

This does however bring forth a second issue that arose: housing. We must ensure that we have enough animals from each species to complete the possible repetition of a presentation in a same day or same time period. This has resulted in the need to keep three to five individuals of each species represented in each presentation topic. There are 27 education turtles housed at the zoo, representing seven species of indigenous freshwater turtles. The genders are kept separately for two essential reasons: first, is to prevent unplanned reproduction, second, and most importantly, is to remove any stresses caused by reproductive behaviour. Males from many species, such as the North American Wood Turtle (*Glyptemys insculpta*) or the Spotted Turtle (*Clemmys guttata*), can be very persistent and exhausting to female tank mates, but as well be very territorial and aggressive towards male tank mates. In the case of these species, and most others kept at the zoo, all males must be individually housed, but females may be kept communally. For this reason, and despite the fact that turtle species native to the Saint-Lawrence Valley are relatively small in size, many tanks are required to house all our turtles.

Transportation of the turtles, as mentioned above, can be considered an advantage due to their scales and carapace, but their ectothermic metabolism can cause difficulties when transporting in colder climates. The turtle's ideal body temperature must be maintained throughout transport in order to maintain an active immune system and to promote a healthy state. We have resolved this issue by constructing insulated transport boxes. Should the need arise, the temperature within these boxes can be increased with the addition of supplemental hot water bottles.

A final challenge, which may or may not be applicable to other institutions, is the acquisition of turtles. Our specimens are acquired through various methods. We offer refuge to rehabilitated and confiscated animals, but our priority is to acquire captive-bred individuals through inter-zoo transfers or through captive hatching within our facility. As a result of careful planning during recent years, we are pleased to state that our captive reproduction program is almost self-sustaining. The captive reproduction of our education turtles permits us to affect the genders (in most species) of our new generation of education turtles, by incubation temperature manipulation. We aim for high female ratio to address the housing challenges mentioned previously. Captive reproduction also permits us to work with individuals at a very young age during our training/desensitisation program (which will be explained later in this article). One disadvantage to captive reproduction vs. acquiring adult animals is that the young turtles need to attain a certain size before they can be transported safely and manipulated daily, in order to prevent damage to their delicate, un-calcified carapace.

Not all are born to educate!

Turtles exhibit a variety of behaviours which may or may not make them ideal education turtle candidates. It has been shown that regular handling can physiologically affect turtles (Cabanac and Bernieri, 2000). We want to ensure that our selected education turtles demonstrate positive behavioural tendencies which may reduce any negative physiological responses. Some turtles are curious, alert and very stimulated by movement around them, while some turtles exhibit the opposite characteristics. Some can be very shy, scared and can be affected negatively by too much environmental stimuli. The selection of our education turtles is made based on an initial evaluation

of the animal followed by continuous reviews during each presentation. We will evaluate turtles differently based on their origins. When a new turtle enters the collection from an exterior source, it must remain quarantined for a period of time during which any behaviours, either positive or negative, will be noted by the animal care handler. If by the end of the quarantine period, the turtle demonstrated mostly positive behaviours, it will then be evaluated by one of the educators. The evaluating educator will test the turtle by presenting it with several situations that it may encounter during a typical work day.

Basic handling will evaluate the turtle's comfort level when taken from its enclosure; does it hide in his shell or is it trying to get away by 'air swimming'. These are two undesirable indicators that the turtle is responding negatively.

Behaviours exhibited while held within the transport container will be evaluated by keeping the enclosed turtle in the evaluator's proximity for several hours (i.e., on a desk while working). The evaluator will note if the turtle remains calm or whether the turtle spends the duration of that time continuously searching for an escape.

We further test whether the turtle can complete a common demonstration: The turtle will be required to flip itself over once placed on its carapace; a suitable turtle will complete this task easily without too much of a delay.

Finally, the turtle is observed for the tendency to bite. Any biting event will automatically remove the turtle from the program.

Once a turtle routinely assists in presentations, any observed negative behaviours will result in the turtle's temporary removal from the program and will then be followed by a health evaluation. We have experienced changes in suitability among individuals which results in the turtle being retired from the program.

The evaluation of captive-bred turtles differs slightly. Once hatched, the animal care staff will observe the turtle's responses to daily tasks such as feeding response, curiosity and responses to handling for tank maintenance and health care. Once the turtle has attained a suitable size, it will be finally evaluated using the above mentioned criteria. We have observed that a high proportion of captive-bred turtles excel in the education program.

Special care for education turtles

A high standard of care is essential for all our animals, but special care must be incorporated into the daily routine when working with educational turtles as these may be experiencing abnormal schedules and higher stress levels. We must consider that daily observations of these turtles must focus on any behavioural changes as these may be indicative that a stress is experienced post-presentation. Weight monitoring is more frequent to discern any anorexic tendencies that may not be immediately obvious in a communal enclosure. We maintain a slightly generous body condition for our education turtles in order to offer more time if an anorexic turtle was unnoticed. This is also helpful as education turtles may miss a meal while out for a presentation. We feed our education turtles more frequently; 3-5 times a week vs. two times a week for non-education turtles. Feeding is scheduled for the end of the day when most individuals have been returned.

Veterinary care remains the same except that we will complete random fecal analysis more frequently, looking for signs of parasitism. Finally, there remains one last difference in care between education turtles and exhibit turtles; our education turtles will require regular nail clipping in order to prevent injury to the handlers.

Creating a compatible educational team

A successful education turtle team requires some extra care and considerations. Overall, the use of live turtles within any educational presentation offers an excess of benefits. Throughout our years of developing a great education team (humans and turtles) we have concluded these points are needed for success:

A good inter-zoo relationship and/or captive reproduction program is needed to maintain a captive population of education turtles. The captive reproduction offers long-term availability of turtles showing suitable behavioural tendencies.

Captive-bred turtles generally become excellent education turtles.

The availability of space, that is sufficient to provide suitable, single-occupant or communal enclosures, is important when creating a stress-free environment for the turtles during their down time.

The number of individual turtles needs to provide an excess for the number that may be needed per day (to compensate for injuries or off days).

Handling must be done in a consistent manner and by handlers that have been properly trained. The public may touch the turtles, but they are never permitted to hold the turtles.

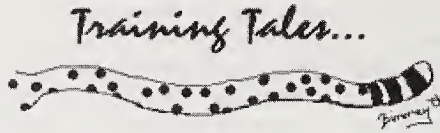
A turtle's training and/or desensitisation period is essential as to identify good or bad qualities and to provide a period where the animals become habituated to a routine.

Finally, a great team of educators is the most important factor to consider. This team is responsible for the training, transport and handling of the turtles; their daily contact with these turtles aid in the observation of physical or behavioural abnormalities; their personalities and energy is needed when creating curiosity and intrigue from their spectators!

In conclusion, it is our objective that other institutions learn from experiences shared here related to the use of turtles in an education program. Although some individuals may not have the behavioural traits required for presentation work, the Ecomuseum zoo education turtles have proven to be very valuable outreach ambassadors over the years. An educational turtle must demonstrate certain behavioural qualities which will encourage proper behaviour while in transport, throughout the presentation and during their off time. Also, special care is needed in regards to their housing, dietary and veterinary needs. Overall, the Ecomuseum zoo's educators have been able to successfully benefit from the use of live turtles as part of their presentations. These turtles, as ambassadors, are helping in the creation of the next environmentally-conscious generation.

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Where you can share your training experiences!

Training Tales Editors – Jay Pratte, Henry Doorly Zoo;
Kim Kezer, Zoo New England; and Beth Stark-Posta, Toledo Zoo

A Tale of Three Camels

By *Erin Teravskis*
Lead Hoofstock Keeper/Enrichment Coordinator
Red River Zoo, Fargo, ND

Introduction

When training a new behavior one must be prepared to be flexible. The same goal can be accomplished using different methods. To train our three Bactrian camels (*Camelus bactrianus*) for vaccinations we used three different methods based on each camel's individual personality.

1.0 Camel "Nasan"

In April of 2011, we acquired a one year-old camel, Nasan, from the Lee Richardson Zoo. He had no prior training but was social with people, food-motivated, and eager to learn. His holding had two places where I could interact with him through cattle panels so I started working on some basic behaviors. I used a clicker as my bridge and produce as reinforcement. In May, we noticed a couple of bare patches on his hip, so training a "lean in" behavior became my priority. After a couple of desensitization sessions to become comfortable with the target pole, Nasan learned to touch his hip to the target and then to swing his hip to follow the target until he was parallel to and touching the cattle panel.

I was soon able to phase out the target and add a hand cue to the already existing verbal cue. Using this behavior we were able to treat and culture the bare patches until we determined that they were benign. Nasan was so enthusiastic about leaning into the panel that I decided to begin vaccination desensitization. He was already familiar with our Veterinary Technician, Amy, at his hip and quickly accepted our Veterinarian, Dr. Colville, as well. We used a syringe fitted with a piece of paper clip instead of a needle to perform mock injections. On 8 June 2011, he received four vaccinations serially without breaking from the cattle panel. One month later he received three boosters with no problems.

After our success with Nasan, our Curator asked if I would train our two adult camels for vaccinations that summer as well. While we worked free-contact around these camels they had no prior training and were not used to being touched. In the past, they had been herded into a small area and pole syringed from above. This was stressful for both the camels and the staff.

1.0 Camel "Cecil"

Cecil is 20 years-old and suffers from arthritis. As a result he is not very active and spends much of his day cushed out in the sandy portion of the exhibit. He is housed with 0.1 Sadie. To keep her from interfering with Cecil's training, our hoofstock intern for the summer, Sam, held Sadie at the



Sam and Erin work on “lean in” with Nasan.

Photo by Marcy Thompson

0.1 Camel “Sadie”

Sadie is 15 years-old and was already comfortable coming up to the front of the exhibit to eat treats. The previous fall I worked a little with her and she had learned to target with her nose. The barrier at the front of the exhibit is tension wire so I thought I could train her for injections the same way I had trained Nasan. We began training 5 July 2011. During our first training session I discovered that while she was comfortable with the target in front of her face she broke anytime the target moved near her body. Since we are able to enter the exhibit with Sadie I tried using my hand as a hip target during the next session. She was not fully comfortable with the sound of the clicker coming from behind her at first, but soon tolerated my hand on her hip and the sound of the bridge. Sam provided reinforcement from outside the exhibit every time Sadie was bridged. During the next few sessions we tried to teach Sadie to target her hip to my hand in the same way Nasan learned to target his hip to the target pole, but she wasn’t catching on. I believe that her previous experience was a factor. Over the years of being fed through the fence she has become very patient. She is used to waiting calmly as people feed her intermittently. Keeping the end goal of vaccinating her as soon as possible in mind, I tried to think of a different approach.

I remembered reading a *Training Tales* article that explained how staff at the Houston Zoo used barrels as a physical barrier to help position lions for injection training (Shepard et al., 2011.)

Was there a simple way to modify Sadie’s training station so she would stand parallel to the exhibit fence? On 26 July 2011 I placed a 4”x4”x8’ piece of wood on the ground about four feet away from and parallel to the fence and baited her in between. It worked! Now that Sadie was standing where we could access our injection sites from the other side of the barrier we began injection

front of the exhibit using produce as reinforcement. I wasn’t sure if Cecil would tolerate four vaccines in a row so we took a new approach. When he was cushed on exhibit I reinforced him with his favorite treats while Amy desensitized one hip and Dr. Colville the other. We started training 16 June 2011 and by 28 June 2011 he tolerated two sets of mock injections on each side well enough that we were able to administer all four vaccines. He voiced his displeasure but didn’t get up from the cush position. A mock session the next day went well.



Sadie receives two vaccines. *Photo by Alli Olson*

desensitization. We desensitized her to both Amy and Dr. Colville injecting her at the same time to maximize our chances of administering all vaccines. We encountered a few additional challenges. For example, Sadie is more sensitive in her rump area so we had to move her injection sites forward, but by working together as a team, we were able to administer all five of her vaccines in three separate sessions by 3 October 2011.

Conclusion

While there is some commonality in how like-behaviors are trained, one must be creative and consider current facilities and each animal's individual personality when designing a training plan. I hope this article encourages people to use their own unique situations to their advantage.

Acknowledgements

I would like to thank the Red River Zoo's veterinary team, Amy Ellwein LVT and Tom Colville DVM, as well as intern Samantha Hetler, as important members of the camel training team. Thanks also to Curator Mike Schmidt for his encouragement on this project.

Shepard, S., Young, J., and A. Pyle. 2011. 3 Lions, 21 Days, 44 Minutes. *Animal Keepers' Forum*. 38 (3): 109-112.

Training Tales Comments by Jay Pratte:

This article covers some excellent training "reminders". Each of our animals are different, with unique personalities, histories and backgrounds. Knowing how an animal has been treated or handled in the past may provide insight to why certain steps in your behavioral plan are challenging in reaching a specific goal. Altering the training environment and being flexible with your approaches allow a trainer to work through these challenges. Our author has demonstrated her flexibility in training approaches by making the necessary adjustments to achieve the same behavior on all three camels.

Learning an animal's history is vital for reaching the training goals. If an animal has been at your facility for a period of time, then you should have easy access to records or people familiar with this animal's history. If it comes from another facility, hopefully you will have access to the animal's ADTF (Animal Data Transfer Form), e-mails and listservs to help contact people. I am a HUGE advocate of sending along information with the animals when they are transferred to another institution or even another department. Provide training logs, cue lists, photos and video. The animal's future caregivers and trainers will appreciate having this information and you are helping to set both them and the animal up for success!

Lastly, I would like to thank our author for making reference to a previous *Training Tales* article. As a committee, it is hard to judge whether efforts in soliciting and publishing papers is successful in reaching/helping the target audience. It is *reinforcing* to hear that keepers and trainers benefit from their peers' articles in the *AKF*. So please, if you are reading this and have an interesting training tale, a novel approach, or overcame an obstacle in a creative way, document it and send it to us with a picture or two. You might be helping other people out! Thank you again for sharing your Training Tale!



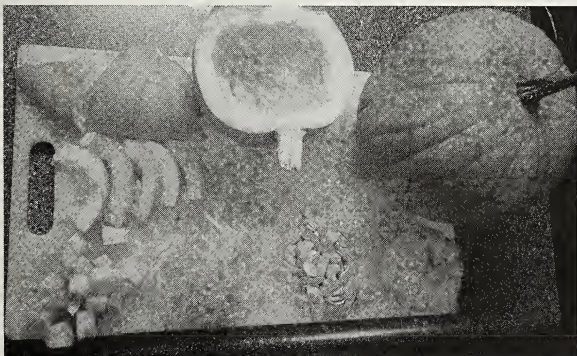
Highlight on Pumpkins!

As Halloween approaches many of us have the opportunity to provide pumpkin-based enrichment. Pumpkins can be quite versatile in the type of enrichment opportunities they can provide.

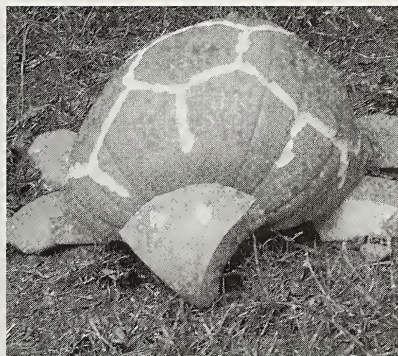
Since pumpkins are edible they can be used to provide **dietary/taste enrichment**. These tasty gourds can be fed out whole, chopped, shredded, or pureed. They can be fed raw, frozen, or even baked/microwaved - which softens them and releases some of the sweetness as well as the aroma (**olfactory enrichment**). Pumpkins can be fed in regular diet feed pans, hung on kabobs/chain/rope, scattered in habitats, hidden in hay/grain, tossed in pools, concealed in boxes/bags, mashed onto trees/walls. This amazing squash-like fruit can be hollowed out, filled with liquids and/or other foods and then frozen to make a multiple-layered and textured popsicle. Not only can the pumpkin meat be fed out but their seeds can be offered raw or baked, adding a bit of protein to their nutritional portfolio.

Pumpkins are brightly colored and can range greatly in sizes and coloration thereby providing **visual stimulation**. These wondrous orange orbs can be carved in endless artistic designs to add depth and visual contrast. They can be painted with non-toxic paint or chalk to add diversity to the visual enrichment component. They can even be decorated with lights to create a unique visual effect.

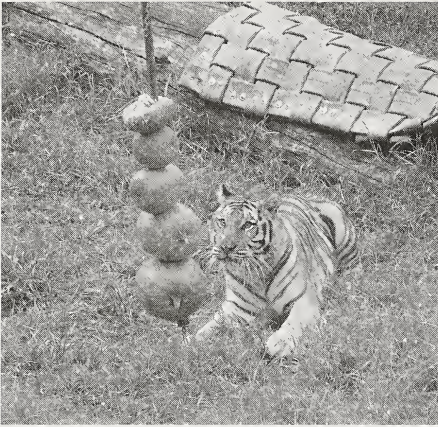
Pumpkins themselves are a novel object that can be carried, tossed, squished, rolled, kicked, hugged, and more. Stab a pumpkin with browse branches to create a decorative and edible browse-holding ball. Because this fall holiday staple is hollow it can be used as an environmental enrichment component by turning it into a hiding spot. Cut one in half and add a small opening to create an igloo type hide spot for reptiles or small mammals. Add a few more holes or decoratively carve the whole pumpkin to create a one of a kind hide spot – or fill it with feeder insects, grain, or bird seed to create a slow release forage feeder.



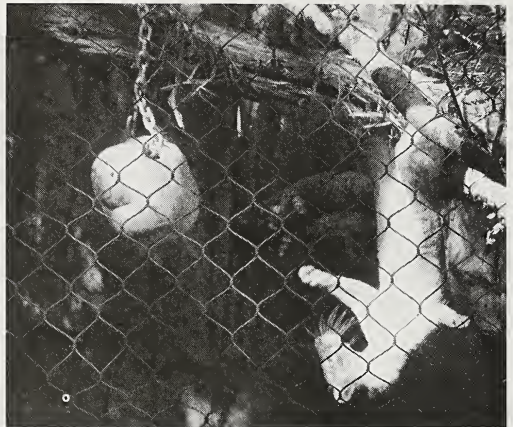
Just some of the numerous ways to prepare pumpkin for diverse enrichment purposes. *Photo by Julie Hartell-DeNardo, AAZK Behavioral Husbandry Committee*



Turtle pumpkin sculpture, soon to be enjoyed by real turtle. *Photo by Julie Hartell-DeNardo*



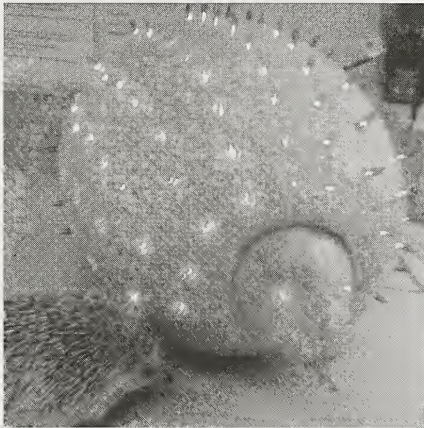
Tiger version of a pumpkin kabob using pvc and chain. *Photo by Leesa Whittlef, Oakland Zoo*



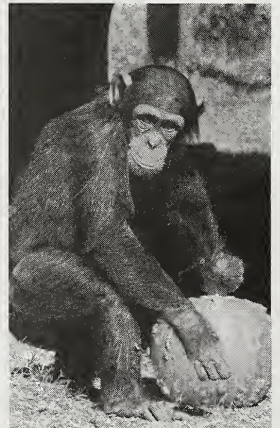
Foosa hanging by rear legs to interact with pumpkin with face drawn on it and hanging from perching – *Photo by Susan Shepard, Houston Zoo.*



Blue & Gold Macaw chewing on mini pumpkin as part of an enrichment kabob. *Photo by Julie Hartell-DeNardo*



Hedgehog investigating lighted hedgehog pumpkin. *Photo by Chris Allen, Oakland Zoo*



Chimp carrying pumpkin. *Photo by Mo O'Leary, Tulsa Zoo*



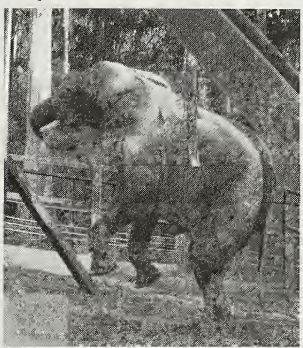
Andean Bear shredding pumpkin. *Photo by Jennifer O'Neal, Tulsa Zoo*



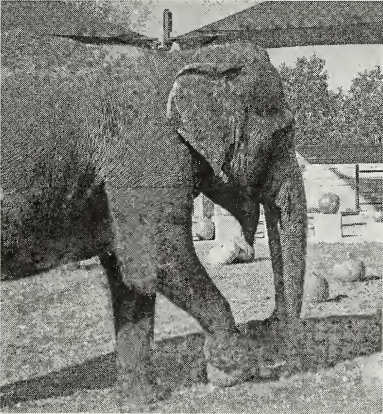
Snow Leopard rubbing on hanging pumpkin filled with nutmeg scent. *Photo by Hans Jorgensen, Tulsa Zoo*

Pumpkins are a natural item that fit the seasonal mood of fall and thus should blend well with even the most naturalistic habitats. They also look great in night-quarters. The cost of this elevating enrichment element can range from affordable to free depending on what arrangements you can work out with the suppliers. Many times pumpkin patches, grocery stores or farmers' markets will donate a few pumpkins to zoos or aquariums prior to the Halloween holiday; this can create great photo opportunities for local media, adding further benefit to both the zoo and the pumpkin donator. Furthermore, after the holiday many pumpkin suppliers will freely donate the remainder of their homeless jack-o'-lanterns. Since pumpkins are a thick skinned squash, they can keep for months with minimal environmental requirements. You can refrigerate them in barrels if the climate is excessively warm. In temperate areas, they will hold up well if stored outside elevated on pallets or racks. Either way just be certain to weed out any soft ones on a routine basis as any other pumpkins adjacent to a spoiling pumpkin are fast to spoil as well.

As you can see, pumpkins have a lot of potential to add a variety of dimensions to any enrichment program!



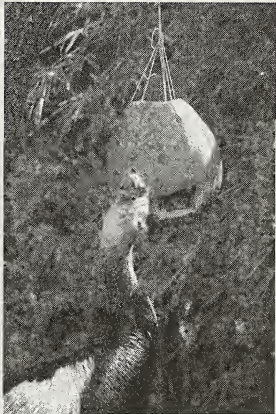
Elephant standing on rear legs using tusks to pop free a pumpkin in a hay net that is suspended from a pulley system. *Photo by Gina Kinzley, Oakland Zoo*



Elephant stepping on pumpkins. *Photo by Jennifer O'Neal, Tulsa Zoo*



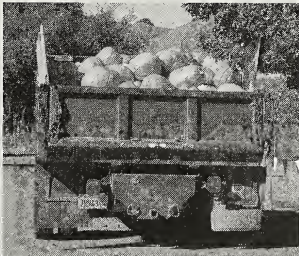
Andean Bear shredding pumpkin. *Photo by Jennifer O'Neal, Tulsa Zoo*



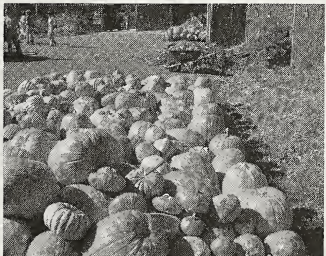
Cassowary investigating a hanging pumpkin feeder. *Photo by Samantha Montgomery, Houston Zoo*



Volunteers & staff unloading truck (and trailer) loads full of donated pumpkins. *Photo by Leesa Whittlef, Oakland Zoo*



Large truck filled with donated pumpkins for enrichment uses. *Photo by Leesa Whittlef, Oakland Zoo*



Pallets and wheelbarrows full of donated pumpkins to last for months ahead. *Photo by Leesa Whittlef, Oakland Zoo*

ASK THE VET

HEY DOC! What exactly is “lumpy jaw” and what can I do about it as a keeper?

— Animal Keeper, Great Lakes Region



(Left) “Lumpy jaw” is primarily found in macropods. Photo by Lynn Tunmer. (Right) A CT scan of a Bennett’s wallaby with a tooth root abscess in the lower right of the jaw (upper left of image). Photo courtesy of Cleveland Metroparks Zoo.

“Lumpy Jaw” is a complex, infectious process that often results in debilitation and death. It is primarily encountered in macropods and antelope. There are multiple factors involved in its genesis; if there were only one or two, it surely would have been eliminated long ago. Despite significant work on it over the last 40 years, it remains one of the most common problems of macropods and certain antelope in captivity. It is by no means an easy problem to conquer.

“Lumpy Jaw” gets its name from its gross, physical appearance of jaw swelling, specifically either nodular or multi-nodular bony and/or soft tissue growth (as opposed to “bottle jaw” which denotes sub-mandibular edema, which also causes swelling but has entirely different causes and treatments) which contain numbers of heavily encapsulated, necrotic areas.^{6,7,14} It is also sometimes called necrobacillosis, because of the common involvement of *Fusobacterium necrophorum* (formerly *Sphaerophorus necrophorus*) and *Bacterioides* sp. bacteria in the lesions.^{4,6,14}

This syndrome (a constellation of clinical signs which can have multiple different causes) can develop secondary to several different inciting events. Clinical signs often begin before the classic “lumpy jaw” swellings are even noticeable. Often an observant animal keeper will notice a decrease in feeding, dropping of feed, chewing only on one side of the mouth, or excessive salivation.¹³ Closer examination of the mouth by either the animal keepers or the veterinarian may reveal the typical foul aroma of necrotic tissue.

There are multiple bacteria that commonly infect both the soft-tissue and the bone of animals with “lumpy jaw.” Although any common oral bacteria may infect the tissue, most frequently there are anaerobes, or micro-aerophilic bacteria such as *Fusobacterium necrophorum*, *Bacteroides* sp., *Nocardia asteroides*, *Actinomyces bovis*, and *Nocardia macropodidarum*,^{2,6,7,8, 10, 14} In hoofed animals, *Actinomyces pyogenes* (formerly *Corynebacterium pyogenes*) is the most common organism. Secondary invaders are often *Pseudomonas* sp., *Proteus* sp., and *Staph.* sp.⁷ These organisms vary widely in their antibiotic susceptibility; often combinations of two antibiotics are necessary to provide

coverage against the different species causing the infection. However, despite the most sophisticated and proactive clinical therapy, treatment failures and eventual euthanasia are common.

Clinically, a thorough physical exam and dental radiographs (often lateral oblique films are most informative) will often indicate the exact type of “lumpy jaw” and possibly its origin. It can present in many forms. Often, in kangaroos and wallabies, apical abscess will develop at the tip of the root of the lower incisors. This is usually, but not always, the result of wear or breakage of the distal tips of the incisors, leading to pulp exposure, infection, and subsequent abscessation. However, sometimes dental calculus buildup on the incisors will lead to periodontal disease and infection of the soft tissues surrounding the teeth, eventually spreading into the bone of the mandible as well.

Sometimes, on oral exam it will be obvious that there was a puncture wound of the gingiva, leading to local abscess formation, and eventually infection of the bone. Indeed, sometimes plant matter is found impacted in them.⁶ On other occasions, dental calculus building up around the gumline will be the obvious cause of periodontal disease, and subsequent infection of the soft tissues and eventually osteomyelitis of the jaw. Indeed, in most cases “lumpy jaw” usually begins periodontally.¹⁴ Draining tracts can be cultured to determine the organisms involved, and both an aerobic and anaerobic culture should be performed. Often, the pre-molars are the first to become infected. Indeed, clinically, it often appears that the infection is secondary to the pre-molars not being shed normally with age, as is seen in nature.^{3,9} These infections surrounding loose pre-molars are the easiest to treat, responding well to extraction and broad-spectrum antibiotic therapy.

In artiodactyls, infection of the bone with draining sub-mandibular tracts is often seen. Extraction, in combination with broad-spectrum antibiotic therapy, can be curative, or at least allow for stabilization of the patient while the osteomyelitis is combated with long-term antibiotic therapy. An alternative to dental extraction, establishment of drainage, regular flushing with antimicrobial solutions, antibiotic therapy, and apicoectomy and retrograde endodontics and filling of the tooth roots has been proposed;⁶ however, even these sophisticated methods are often unsuccessful. Chronic, inflammation from “lumpy jaw” has been implicated in the development of reactive amyloidosis in some hoofed animals.¹²

Over the last 40 years, there have been at least two different methods of dietary management attempted. The first was to eliminate any sort of tough material in the diet, which might cause gingival puncture and subsequent infection;^{11,13,14} These animals were often fed many kinds of soft foods. Another method of dietary management was to increase browse and provide as much good-quality forage (either high quality grass hay or alfalfa) to allow for as much gingival stimulation and natural “flossing” of the teeth as possible, and to contribute to normal shedding of premolars.^{2,4,9} As one author put it, “diet should be fibrous enough to maintain good oral health, so that accumulation of dental calculus is minimal, and the gums remain firm, but not so coarse as to damage the oral mucosa.”⁴

My personal clinical experience, as well as epidemiological evidence gathered in the late 1970’s,¹¹ supports the value of good quality forage and fibrous browse in reducing the incidence of lumpy jaw. While both groups of animals (those on only soft foods and those fed mostly forage and browse) did develop dental infections, my “clinical impression” is that the animals on a strictly “soft food” diet developed it at a younger age. Thus, kangaroos and wallabies on soft diets were developing it at five or six years of age, whereas those on browse and high quality forage would get it at eight or nine years of age.

In addition to diet, many clinicians believe that crowding, and subsequent fecal contamination of the paddock contributes to high bacteria counts on the food, and subsequently a higher incidence of infection.^{2,4,10,13} Therefore, many veterinarians recommend reducing crowding and making efforts to reduce fecal contamination of the paddock.^{1,2,10} Tractors fitted with commercial vacuum devices to remove fecal pellets from fields, as have been used to facilitate parasite control in other species,

would seem to have utility in this regard, as would feeding from hay-racks or bowls rather than off the ground or floor.

One recent and interesting theory is that diet may contribute to hyper-phosphatemia in these animals.⁵ One study sought to determine if offering timothy hay to the animals while on the grassy exhibit would encourage extra foraging, saliva production, and improved calcium to phosphorus ratios.⁵ Although intriguing, not enough clinical data has been gathered to support or refute this theory, although it remains an interesting question. This theory does not, however, account for the clinically observed development of periodontal disease prior to the beginning of bone resorption in most cases.

Routine oral examinations, and prophylactic scaling of the teeth would likely help to reduce the incidence of “lumpy jaw” in any herd. Similarly, attention to diet, and provision of a good quality grass hay or alfalfa, and minimizing soft foods such as fruit, which may contribute to dental calculus formation and gingivitis will also help. Similarly, making sure that forage and browse does not contain sharp weeds and stems will diminish the chances of oral punctures inciting lumpy jaw.

In some countries (such as Australia) vaccines are available to protect against *Fusobacterium necrophorum*, and clinicians from those countries report that vaccination does help, too. Finally, routine examinations and dental prophylaxis to remove calculus buildup, as well as to detect and treat this problem in its early stages, can also assist in reducing (although probably not completely eliminating) morbidity and mortality from “lumpy jaw.”

The animal keeper can greatly help with many of these factors, and also assist by being attuned to the subtle clinical signs of early dental disease (drooling, chewing on one side, inappetence, subtle swellings, foul breath, nasal or conjunctival discharge). Similarly, once the diagnosis is made, often the animal keeper’s skill in administration of antibiotics or restraint for examination by the veterinary staff becomes key to recovery. This is a good example of a problem that has dietary, husbandry, and medical components, and one where good cooperative work between animal keepers and veterinarians can significantly benefit the health of the herd. In the case of “lumpy jaw”, as in many diseases, the keeper is at the front line of defense for both prevention and treatment of this disease.

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Do you have a question for the Vet? Send your questions to the AKF Editor at shane.good@aazk.org and he will pass them on to Doc!

For Faunal Friends No Longer With Us: Creating an Animal Remembrance Garden

By Brett Bannor
Atlanta, GA

Introduction

The year 2011 marks a personal milestone; I have been employed in animal care for 30 years now. Reflecting on this time, I'm struck by how humans enjoy a longevity not experienced by most animals. It is poignant for me to consider that the majority of the animals I first took care of back in 1981 are long gone. You who are young and have not been in this profession for as long as me may wonder if it ever gets any easier dealing with the death of an animal you treasured and cared for. It does not.

My curator, Cindy Horton, shares my passion for animals, and like any great leader, she challenges her staff to give vigorous effort toward special projects. And so it was that in 2010 Cindy suggested to me that I build a little garden as a tribute to the animals of the Farmyard at Stone Mountain Park that are no longer with us. This article chronicles my inspirations and efforts to create the garden. Inevitably, it contains a great deal of specific and personal thoughts, but I will share these so that anyone who wishes to create his or her own animal remembrance garden might gather some insight to use in such a project.

Concept and Design

The site Cindy suggested for the garden could not have been more unassuming; it was a vacant piece of weedy land between the paved service drive to our barn and the long wooden ramp leading to our dumpster. This area is out of public view, but this was to be a personal garden for the keepers rather than a display for visitors. This freed me from some aesthetic concerns. Still, how could I fashion an intimate garden in such an ordinary spot?

My first decision was one that might make a landscape architect or garden designer cringe. I would not commit anything to paper; I would simply gather elements for the garden and arrange them as seemed fitting. While a carefully crafted site plan is a sound idea for any design—and absolutely essential for any large project—I reasoned that for a small project like this I could just arrange details by eye, striving for balance and sensitivity.

To gather some inspiration on how to proceed, I recalled how back when I studied landscape we were taught the wisdom of a few lines of Alexander Pope's 1731 poem "Epistle to Lord Burlington" (Epistle IV)

"Consult the genius of the place in all;
That tells the waters or to rise, or fall;
Or helps th' ambitious hill the heav'ns to scale,
Or scoops in circling theatres the vale;
Calls in the country, catches opening glades,
Joins willing woods, and varies shades from shades..."

By "genius of the place," Pope means the spirit of the place, also called the *genus loci* from the Latin (Hunt 1992: 229).

So what did the spirit of the place tell me as I began my project? The ground was gently sloped, so I thought I'd design the garden to be ascended, with its entrance at the lowest elevation and focal point at the highest spot. There were also three elements of the site that obviously would have to stay, whatever my design was. First, there was a fine old shortleaf pine (*Pinus echinata*) with a trunk 1 ft. 1 in. in diameter. Second, there were two stumps remaining from even bigger trees; the more prominent one was 2 ft. 4 in. in diameter and rose 4 in. above the ground. Finally, there was a 12 ft. high nonfunctioning light pole. All these would have to somehow be incorporated into the design. (Here and throughout, English units are used instead of metric; while metric is appropriate for a scientific paper, this is an article about gardens and American landscape designers use feet instead of meters.)

But what spirit of the place could inspire me if I thought beyond the confines of the proposed garden spot? The Farmyard sits in Stone Mountain Park. Its centerpiece, Stone Mountain, is a massive granite monadnock. Granite was quarried from one portion of the mountain from the late nineteenth century until 1978 (Stephen & Mirza 2011:67). From my explorations around the Park, I knew there was a place where a large number of rocks remaining from the quarrying operations had been dumped. When I returned to the pile for a thorough investigation, I saw that there were mostly rocks in a natural state, uneven on all sides. There were, however, also some rocks with flat surfaces, created by having been lifted out of the vast bed of granite by the stonecutting process.

Presently, a simple design for the Animal Remembrance Garden occurred to me. I would use irregularly shaped granite rocks to make a ring. Within the ring I'd set some flat surfaced granite slabs; upon these I'd write inscriptions from poems that would serve to remind my co-workers and me of the wonderful feelings our animals give us. I'd acquire a few plants to place between the inscription rocks—Cindy suggested rosebushes--and then I'd cover the entire garden with a unifying layer of pine straw as mulch. The result would be quite simple, but I hoped it would also be memorable.

Step one of the execution of the design was to pull up all the unkempt herbaceous growth in the site. I cleared out everything except two young trees that I retained in the garden—a loblolly pine (*Pinus taeda*) and a post oak (*Quercus stellata*). The pine stands at the entrance to the garden, while the oak sits beside the big stump at the uphill end of the garden. I transplanted a second small post oak so that the stump was flanked by matching trees.

The next step was to lay out the outer dimensions of the garden and set out the surrounding ring of rocks. Why the ring of rocks forming the garden's borders? As Robert Pogue Harrison notes, "It is primarily a garden's perimeter that sets it apart, that gives shape and definition to its living form... A garden is literally defined by its boundaries" (Harrison 2008: 56). The boundaries need not be a tall fence or wall; a surface one-quarter of an inch high can define the space around it (Walker & Blake 1990: 124).

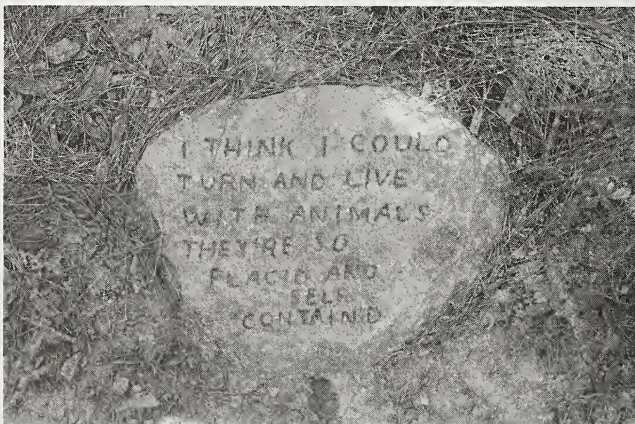
Thus, the boundary of the Animal Remembrance Garden is clearly delineated by 36 rocks, ranging from 6 in. to 1 ft. 8 in. long, while the resulting enclosed space measures approximately 21 feet by 16 feet. The boundary rocks are buried so that none of them juts more than 5 in. above the surface of the ground. Having rocks partially buried is a characteristic of Japanese gardens (Seike, et. al 1980: 43). Indeed, the simplicity of the entire arrangement I settled on has something of a Zen feeling to it.

There are four inscription rocks strategically placed inside the ring. The practice of including inscribed tributes to animals in a landscape is rather old, as two examples from 18th century English gardens demonstrate. The gardens at Rousham feature—at the feet of a statue of Venus, no less—a plaque lamenting the passing of "an otter hound of extraordinary sagacity" named Ringwood (Moore, et. al 1988: 134). At the gardens of Stowe stands a structure called "The Temple of British Worthies;" the rear of this edifice has a memorial to a greyhound named Signor Fido (Hunt 1992: 84).

Expense made carving inscriptions into the rocks in the Animal Remembrance Garden out of the question. I'd have to use a permanent marker, which no matter how boldly drawn would need to be reapplied regularly. At times the transient nature of my inscriptions has troubled me, but when it does I find comfort in Robert Harrison's advice that "apart from a few lofty exceptions, (gardens) do not exist to immortalize their makers or defy the ravages of time. If anything they exist to reenchant the present" (Harrison 2008: 39).

The first inscribed rock stands apart from the other three; it is beside the little pine at the garden's entrance. On this flat stone I've set down perhaps my favorite animal imagery line from a poem.

It is the opening line to stanza 32 of Walt Whitman's "Song of Myself": "I think I could turn and live with animals, they are so placid and self-contain'd..." When I studied American poetry in college, the professor emphasized Whitman's significance, arguing persuasively that the 1855 publication of that poet's *Leaves of Grass*—the collection which included "Song of Myself" was a literary milestone. You can read the entire poem at Princeton University's website: princeton.edu/~batke/logr/log_026.html.



If you do examine the poem, you will note the appearance of a number of animals. Although I didn't use the opening words of stanza 14 on any of my rocks, I want to mention those lines in passing as they are the most soothing animal image I've ever encountered:

*The wild gander leads his flock through the cool night,
Ya-honk he says, and sounds it down to me like an invitation,
The pert may suppose it meaningless, but I listening close,
Find its purpose and place up there toward the wintry sky.*

The Animal Remembrance Garden's other three inscribed slabs are arranged in a semicircle at the high end of the site in an alternating pattern with four red flowered "Knock Out" rosebushes (*Rosa 'Radiko'*). The left rock has lines from Carl Sandburg's fun 1918 poem "Wilderness." This is a work that speaks especially forcefully for zoo keepers; you may enjoy the complete poem at poetryfoundation.org/poem/238490. From this menagerie of animal imagery, I selected these words for the left slab: "And the mockingbird... warbles in the underbrush of my Chattanooga of hope." This was a very personal choice. I was born in Chicago and raised there in a beautiful Victorian home that sat just one block away from a similar home where Carl Sandburg had once lived. While I spent my boyhood in Chicago, I've spent my adulthood in the South and I've come to love the region. Because of my background, I find that the southern imagery of the mockingbird and the "Chattanooga of hope"—penned by a poet who also lived in and wrote poems about Chicago—to be quite charming.

Upon the center rock is an inscription from William Blake's "The Lamb." Blake was a late 18th century English poet who is probably better known for his verse about tigers than sheep ("Tyger! Tyger! Burning bright/ In the forests of the night,/ What immortal hand or eye/ Could frame thy



fearful symmetry?”). Blake’s poem “The Lamb” can be read at: <http://www.poetryfoundation.org/poem/172926>. I choose these lines to inscribe: “Softest clothing, wooly, bright; / Gave thee such a tender voice, /... Little Lamb, who made thee?” We have a dozen sheep in the Farmyard, and naturally they baa loudly in the morning when they want to go out of the barn and also in the evening when they want to come back in. Inclusion of a poem acknowledging their “tender voices” seemed obvious! I should clarify that with all the

inscriptions I had to be a rough editor, excising particular words or lines simply so that I could fit passages I wanted onto each granite slab.

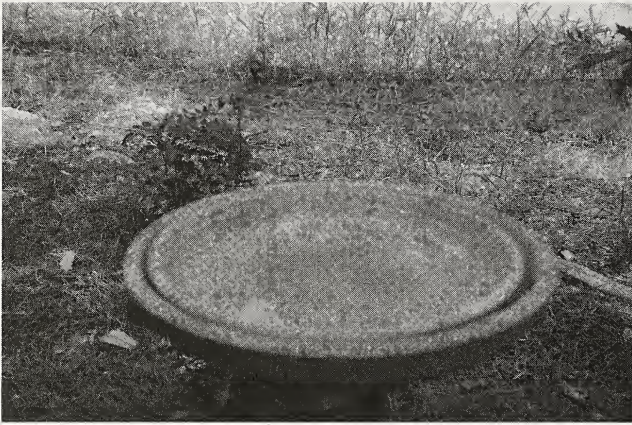
Finally, on the rightmost stone in the group of three inscribed slabs, are lines from “The Heaven of Animals” by James Dickey. The complete poem may be read at: <http://www.poetryfoundation.org/poem/171425>. The rock containing Dickey’s words sits at the base of the old shortleaf pine, and for that reason I thought the appropriate lines to inscribe were: “Under such trees in full knowledge/ Of what is in glory above them,/ And to feel no fear...” Since the Animal Remembrance Garden acknowledges animals in their ultimate state of rest, it is comforting for me to imagine them also in a state where they can feel no fear. And once again, I have a personal connection. I heard the late Mr. Dickey at a poetry reading, circa 1980, when I was an undergraduate majoring in zoology and minoring in English. I wrote a paper on “The Heaven of Animals” in my modern American poetry class for which, I recall, I only received a C. (Perhaps I simply wasn’t as inspired back then.) One other connection exists here; that of the poet to the place, for Dickey was born in nearby Atlanta in 1923. Appropriately enough, his birth was on February 2nd—Groundhog Day (Untermeyer 1969: 691).

After looking at the inscriptions, one of my colleagues made a suggestion. Why not also write the names of the animal friends we’ve lost on the ring of rocks around the garden? It was a wonderful idea, and so upon those rocks I wrote “Max” (a sheep), “Clover” (a goat), Dee Dee (a pig) and so forth.

I planted a trumpet vine (*Campsis radicans*) at the base of the defunct light pole that now grows up and around. With luck the vine might begin to bloom next year.

After all this, something still seemed missing. The high end of the garden, with the big stump and the inscribed slabs and rosebushes in the semicircle in front of it, still needed a distinctive focal point. So I added a birdbath. Given the personal commitment I’d made to the garden, however, it simply wouldn’t do to buy a premade unit. So I constructed a handmade birdbath. I first made a stand by anchoring a stout wooden 24 in. long piece of landscape timber into the stump with rebar. Then I simply hammered a platform on top of the stand, fastened a 14 in. wide epoxy saucer in place





atop the platform, and inserted a 12 in. wide epoxy saucer into the larger one as the bath itself. (The saucers I speak of are the type designed to place under flowerpots.) The birdbath is commonly visited by Eastern phoebes (*Sayornis phoebe*), American robins (*Turdus migratorius*), Carolina wrens (*Thryothorus ludovicianus*), Eastern towhees (*Pipilo erythrophthalmus*), Northern cardinals (*Cardinalis cardinalis*), and tufted titmice (*Baeolophus bicolor*). The two small post oaks flanking the stump are

perfect perches for the birds as they hop on and off the birdbath.

Conclusion

Several weeks after I finished the work, Cindy surprised me by announcing to the staff that we would hold a small dedication ceremony for the Animal Remembrance Garden. When we gathered, Cindy spoke eloquently about what animals mean to us—and to the people who visit the Farmyard. She reminded us that the animals that have died at the Farmyard live on not only in the memories of the keepers who care for them, but also in dozens of photographs taken by our guests. Certainly there must be many parents who treasure a photo of their child petting one of our goats, sheep or pigs. And so, the warm memories of the few of us who provide care for our animals are shared by the many who visit our animals.

I emphasized in the introduction that the design concept and execution of the Farmyard's Animal Remembrance Garden was quite personal. But the pleasure of taking care of animals, the unhappiness when they die, and the fond memories of them after the grieving has passed are, I hope, universal among zookeepers. So while my efforts may not match what you would strive for in a garden to your departed animals, I hope I have helped you imagine ideas if you choose to undertake such a project. Maybe you would like to set up a vegetable garden, or a browse garden, that reminds you of a special departed animal because it includes produce or foliage the animal relished. Perhaps you might fashion a garden featuring plants with animal-related names—tiger lilies or leopard plants, for instance. Bird keepers might strive for a garden as colorful as the birds that inspired it. The possibilities are numerous, and to further inspire your efforts, let me quote several lines from the introduction of *The Meaning of Gardens*, a wonderful collection of essays on the powerful hold gardens have on human imagination:

"Gardens have special meaning. They are powerful settings for human life, transcending time, place, and culture. Gardens are mirrors of ourselves, reflections of sensual and personal experience. By making gardens, using or admiring them, and dreaming of them, we create our own idealized order of nature and culture... Since the beginning of human time, we have expressed ourselves through the gardens we have made." (Francis & Hester, 1990: 2).

Acknowledgments

I wish to dedicate this article to my mother, Anne Elizabeth Bannor, who passed away while I was writing it. Since we lived in different cities, we corresponded regularly—often discussing books we'd read-- and in my final letter to her before her death, I shared thoughts about Robert Harrison's *Gardens: An Essay on the Human Condition*. I have referred to that book in this article, and I knew it was one Mom would have enjoyed reading if only she had had more time. In a chapter entitled "On the Lost Art of Seeing," Harrison wrote with obvious concern "(N)othing is less cultivated these days in Western societies than the art of seeing. It is fair to say that there exists in our era a tragic discrepancy between the staggering richness of the visible world and the extreme poverty of our capacity to perceive it (p. 114)." I had the fortune to be blessed with a mother who opened my eyes to the richness of the visible world in more ways than I can now count; writing this piece on the Animal Remembrance Garden was a small way of showing Mom my gratitude.

Also I want to thank another woman who has influenced my thinking profoundly, my curator Cindy Horton. The genesis of the Animal Remembrance Garden was a flash in her mind; she had both the generosity to share the idea with me and the faith to allow me to develop the project.

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REMEMBERING ANDY HENDERSON

By Norah Farnham, Woodland Park Zoo



On 20 August 2012, zoo keepers and animals around the world lost a dear friend and true champion. Andy Henderson, known and loved by keepers around the globe, died after losing his battle with colon cancer. I knew Andy for nearly 25 years, and would like to reflect on his extraordinary life, both in and out of the zoo.

As with many people who become fast friends, I can remember the exact moment in 1988 when I first met Andy. I had just started working at Chicago's Lincoln Park Zoo, and we hit it off immediately. Though we never worked in the same zoo section, we spent much time together at AAZK functions, attending concerts and parties, and as neighbors on Chicago's north side. We often carpooled to work---though if it was Andy's turn to drive I was just as

likely thrown on the back of a motorcycle or into an ancient Volvo which needed to be coddled and coaxed to reach the zoo. We usually had breakfast on the way, and Andy never needed to say what he wanted---whichever waitress was working (always called "Darlin'" by Andy) would automatically bring him his oatmeal and coffee.

Andy worked for nearly 25 years at Lincoln Park Zoo. He started in the Children's Zoo, in the days when Chimp Tea Parties were a regular event. I heard many stories from Andy about these parties---how the chimps would often decide to bolt away from the table or get into some sort of mischief, and force Andy to chase after them. As silly as those parties seem now, Andy had a blast! He loved to entertain and educate the visitors---sometimes with a macaque on his head or a snake wrapped around his waist. He went on to become the night keeper for many years, patrolling the zoo, feeding and checking on sick and baby animals, especially in the zoo nursery. One evening he brought family members along to bottle feed and play with a young chimp and baby orangutan. "Being there with Andy and seeing the grin on his face, playing with these little animals, I saw why he enjoyed his job so much" his brother Mike said. "They were like his kids." In 1995, he was promoted to Area Supervisor of Primates. He played an integral role in the design, planning, and construction of the zoo's Regenstein Center for African Apes. He organized shipment in and out, for all of the Center's apes, before, during, and after construction.

As a keeper who always wanted more than the daily chores involved in our work, Andy was very involved in AAZK, both on a local and a national level. He was a driving force in our local Chapter, and regularly attended regional meetings and conferences. He convinced me to go to my first national conference in Syracuse in 1989. Of course by that time, Andy knew many people, and made sure to introduce me around and "show me the ropes" of AAZK. Many of us remember the conference when he arrived late at night, fresh off the Greyhound Bus from Chicago, and went directly to the Hospitality Suite, still carrying his backpack, to be greeted with cheers of welcome by the crowd. And if you were around for the dancing portion of the final Banquet at the conference, you will

remember Andy's unique brand of dancing! Some of us just called it the "Andy Dance"...if you saw it, you remember it!

When the conference in New Orleans was canceled due to Hurricane Katrina, Andy, like many delegates, was already there and staying at the conference hotel. While everyone else evacuated by any means possible, Andy declined to leave, and hunkered down to ride out the storm. He walked the streets, watching how people dealt with the disaster, and stayed put. When I asked him later why he did not leave, he said, "Because I've never seen a hurricane before!" As if it was blatantly obvious and I was completely missing the point!

After several AAZK conferences together, I convinced Andy to run for a position on the Board of Directors with me. We did, and I was honored to serve on the BOD alongside him. He was very proud of his involvement with AAZK, and took the responsibility very seriously. In total, Andy attended nearly 20 AAZK conferences, served as a Chapter President for five years, organized 12 BFR events, and participated in BFR every year since its inception.

In addition to his AAZK service, Andy worked tirelessly on a number of AZA projects, including the New World Primate TAG Steering Committee and serving as the Studbook Keeper for Bolivian gray titi monkeys. Under the Ape TAG, he served on consulting teams for gorilla hand-rearing, chimp hand-rearing, Gorilla SSP, and the Gorilla Behavioral Advisory Group.

When the International Congress of Zookeepers formed and began hosting international conferences, Andy was right there, too. He attended all three which have taken place so far--- Holland 2003, Australia 2006, and here in Seattle in 2009. Always up for adventure, we traveled together after the '03 and '06 conferences, seeing zoos across Holland and Australia, and snorkeling on the Great Barrier Reef. I know he would have attended the conference in Singapore this year if possible.

Soon after receiving the phone call informing me of Andy's passing, I went to Facebook. With 53 mutual friends, I knew I would find some comfort there. Sure enough, as the word spread, Andy's page became a place where we gathered to first absorb the shock, then share the sadness, and finally to assemble a memorial. The idea of an international toast to him came about quickly, and as the clock struck 8:00 p.m. from coast to coast and around the world, glasses were raised in honor and memory of our departed friend. I like to think he was watching, laughing!

Many of the comments on his page spoke of memories of Andy both at the zoo and outside of his zoo world. But nearly all had a common thread---the adjectives used to describe him included 'passionate', 'dedicated', 'joyful', 'optimistic', 'caring', 'kind', 'loving', and 'one in a million'. And more than a few mentioned his ever-present smile and that laugh! Who could forget the laugh, sometimes a sly giggle, more often an outrageous and loud outburst of pure hilarity!

Besides zoo animals, Andy shared his life and home with a variety of domestic pets. When I first met him he had Koda, a German Shepherd. He had a sidecar on his motorcycle at the time, and more often than not it was Koda who was the passenger, rather than a person. He also bought her saddlebags and made her carry his groceries home from the store. After Koda, Andy got two Komondor dogs---bred for sheep protection in Hungary. Goulash and N'Yeti were covered in dreadlocks, as Andy was at the time. You could not walk down the street with Andy and those dogs without being stopped by nearly every person you met. Andy never seemed to tire of the inevitable. "No, they are not sheepdogs..." He always had a cat or two running around as well, including the infamous Lucretia Borzia, a deaf Persian covered in (unintentional) dreadlocks herself.

Even with a full schedule, Andy found time to earn bachelor's degrees in biological sciences and chemical sciences from the University of Illinois at Chicago and a master's degree from Northeastern Illinois University. My sister Molly was in a subsequent NEIU class and remembers, "Our Professor passed around a copy of Andy's thesis, because it was one of the best he had encountered. Andy also visited our

class to discuss his thesis - he was a star pupil. Very intelligent guy, and fun - to say the least.”

Among zoo animals, rhinos were one of Andy’s favorites, as his tattoos attested. In 1990, he and I helped organize the first Bowling for Rhinos at Lincoln Park, and continued to do so for many years after. Andy traveled to Lewa as the guest of one of LPZ’s BFR winners, and was fortunate to spend two weeks with Anna Merz. We also hosted Anna several times in Chicago, to assist with her fundraising efforts there. I am planning to return to Lewa next May---I will carry some of Andy’s ashes to scatter at the place he so enjoyed. I think he is the reason rhinos became my favorite zoo animal.

It was through Andy that I first heard of *Burning Man*. Once he discovered it, he made the trip every year he could. As an avid motorcyclist, another of his favorite gatherings was the annual *Sturgis Motorcycle Rally*. He loved *BMW* cycles and often, when visiting his house, I would find him knee deep in parts, restoring a vintage bike, sometimes right in the middle of the living room floor. Andy also enjoyed *Grateful Dead* concerts, and could sometimes be found selling tie-dyed t-shirts to the crowd. I guess you could say if there was a group of people having fun, you were likely to find Andy in the middle of it! As for *Burning Man*, some of Andy’s ashes and several photos of him made the trip this year, to be consigned to the flames of the memorial temple. His brother Mike told me, “One way or another, Andy was going to *Burning Man* this year, and he will remain forever part of the celebration”.

He was my friend, and I loved him.

Aside from Mike, Andy is survived by his brothers Scott and Barry, and his dog Izzard. On behalf of the AAZK family, I would like to extend our condolences to them and their families.

Finally, a few quotes from friends:

I will always remember being a newbie to the national AAZK scene back in 1988. My first conference experience was Tuscon. What an experience it was. This was in no small part to a great friendship that I formed with Andy at the conference which would last up until his recent passing. Andy was like no one I had ever met. We fast became best buddies as like-minded souls. We had so much in common - our love for animals and the natural world, music, and having fun. Wow, how this guy could laugh - anyone who knows Andy will never forget his laugh. I will always remember that conference where I met many lifelong friends from the Lincoln Park and other zoos. My greatest memory however is the start of a great friendship with an incredibly eclectic, intelligent and sensitive guy who lived way too short a life.
--- From Tom Aversa

The world and zoo community lost a very special person, Andy Henderson. He was one of the first people I met at LPZ and my first boss in the “real world.” Although he gave me near heart attacks during exhibit modifications by balancing on one foot on the top (illegal) ladder rung, he was always a joy to work with. His enthusiasm, positive spirit, bright smile, and funny laugh will be missed by many. At least we can rest assured that he is in peace, watching over all his primate friends.
--- Leslie Lurz

I’ll never forget the night in Chicago when Andy caught his two giant dreadlocked dogs cornering a possum in his yard. The dogs had already bloodied the possum but it was still breathing. Andy ordered the dogs off, grabbed the possum by the tail and the four of us walked that possum five blocks through one of the worst neighborhoods of Chicago before Andy tossed it to safety over a cemetery wall. The stares and comments from the neighborhood thugs as we walked by were priceless; Andy holding the bleeding possum out in front of him with the two bizarre dogs following closely behind. “There goes Crazy-azzed Andy with those crazy-azzed dogs!”
--- David Kahle

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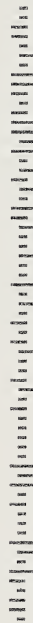


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